

On some Old-World Species of Scorpions belonging to the Genus *Isometrus*. By R. I. POCKOCK, of the British Museum (Nat. Hist.). (Communicated by W. PERCY SLADEN, F.L.S.)

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(PLATE XI.)

THE examination of the Buthidæ contained in the collection of the British Museum has brought to light a number of new species of the group. Those referable to the genus *Isometrus* are described in the present paper, which contains in addition a few remarks upon the synonymy and affinities of one or two previously known forms.

Speaking generally, *Isometrus* may be described as almost cosmopolitan, although representatives have not yet been recorded from the Palæarctic Region. However, in Central and South America, in Africa south of Sahara, in India, Indo-Malaya, Austro-Malaya, and Australia the species are fairly abundant, and the number at present known will no doubt be largely added to in years to come.

In the Old World the species may nearly always be recognized from others of the family by the variegated black and yellow pattern of the upper surface of the body and legs; in some instances, however, the limbs and trunk are concolorous or nearly so. The colours, allowing for variations, are of some use in the recognition of the species; but the best characters for this purpose are to be obtained from the form of the tail, the keels on the tail and trunk, the width of the hand, length of fingers, &c.

The sexes differ largely and in a variety of ways. The male may almost certainly be detected by possessing some one or more of the following features:—The hand will either be longer and relatively more slender, or stouter than it is in the female; at the base of the dactyli there is often a wide space formed by the sinuation of the proximal half of these organs; the trunk is more slender; the tail much or a little longer, and sometimes only thicker.

On *ISOMETRUS TRICARINATUS*, Simon. (Pl. XI. figs. 1–1 *d.*)
(Simon, *Ann. Mus. Genov.* xx. p. 47, 1884.)

Pondicherry, Madras.

The British Museum possesses three specimens of a species of *Isometrus* sent by Mr. Jerdan from Madras, which are unques-

tionably referable to *I. tricarinatus* of Simon. Mons. Simon had only a female for examination, and since one of the specimens in the Museum collection is a male, I take this opportunity of pointing out the sexual characters of the species.

♀. Tail much shorter, only a little more than five times the length of the cephalothorax; the first segment about as wide as long; cephalothorax about as long as the first segment and half the second, slightly longer than the fourth.

Manus about as wide as the brachium; digits in contact throughout, neither lobate nor sinuate.

♂. Tail much longer, about six times the length of the cephalothorax; width of the first segment equal to about two thirds of its length; cephalothorax very slightly longer than the first caudal segment, much shorter than the fourth.

Manus wider than the brachium; digits not quite in contact at the base, the movable furnished with a distinct lobe which fits into a sinuation of the immovable.

I. Shoplandii, Oates, is very closely allied to this form and can, I think, only be regarded as doubtfully distinct. In his description of this species Mr. Oates, to whom *I. tricarinatus* was unknown, lays considerable stress on the differences of colour between the two; but the words "*the whole animal uniform fulvous*," with which he differentiates *I. tricarinatus*, are scarcely in accord with the following sentence with which Mons. Simon's description begins, "*Obscure fulvus, pedibus dilutioribus, caudæ segmento quinto leniter infra infuscato.*" As a matter of fact, there is very little difference in colour between the two, what difference there is being noticeable principally on the under surface of the tail, which is more infuscate in *I. Shoplandii*. The upper surface of the abdomen in at least one of the specimens of *I. tricarinatus* is considerably darker than the limbs, and the tergites bear distinct traces of the fulvous >-shaped mark which is noticeable in the specimen of *I. Shoplandii* which Mr. Oates has kindly presented to the Museum. Apart, however, from colour, certain differences are undoubtedly to be seen between this specimen of *I. Shoplandii* and the three above-mentioned examples of *I. tricarinatus*. Thus, in the former the cephalothorax is slightly more emarginate in front and the antecular area is more coarsely granular; again, the lateral tergal keels are represented only by one conspicuous granule, whereas in *I. tricarinatus* these keels are composed of about three fused granules; and, lastly, the tail

in *I. Shoplandii* seems to be more slender, and the terminal granule of the superior keels not larger than the rest.

Whether these differences will stand the test of an examination of a number of specimens from intermediate localities is a question which, for the present, must be left unanswered.

There is also in the Museum a single dried and apparently young female specimen of an *Isometrus* which came from Calcutta. This specimen differs from the type of *I. Shoplandii* in having no trace of lateral tergal keels and distinctly longer manus and digits; these taken together being longer than the first two caudal segments, whereas in *I. Shoplandii* they are slightly shorter. I have very little doubt, however, that it is referable to this species.

On ISOMETRUS SCUTILUS (*C. Koch*).

Syn. *Lychas scutilus*, *C. Koch*, *Die Arachn.* xii. p. 3, fig. 962 (1842).

Isometrus Weberi, *Karsch*, *Berl. ent. Zeits.* xxvi. p. 184 (1882).

Isometrus messor, *Simon*, *Ann. Mus. Genov.* xx. pp. 47, 48 (1884).

Isometrus Phipsoni, *Oates*, *Journ. As. Soc. Bombay*, iii. p. 248, figs. 1 & 2 (1888).

Tenasserim (*Oates*), Salanga (*Mus. Brit.*), Bintang (*Koch*), Java (*Simon*), Keeling Island (*Thorell*).

There seem to me to be very strong grounds for suspecting, with Dr. Thorell*, that *I. Phipsoni* is synonymous with *I. scutilus*. Undoubtedly, to judge from the figure and description of the latter, the two forms differ in colour; but those who are familiar with Koch's work will know what confidence is to be placed in the accuracy of the painting of the figures and in the wording of the descriptions.

In shape, length of tail and of appendages, &c., the figure of *scutilus* agrees well with the female of *Phipsoni* (of which, through the liberality of Mr. Oates, the Museum possesses many examples from Tenasserim); and the view that the two are identical is much strengthened by the fact that the Museum possesses in addition a specimen of *Isometrus* (obviously co-specific with the specimens named *Phipsoni*) from Salanga, a locality relatively so close to Bintang, whence the type of *scutilus* came.

However that may be with regard to *scutilus*, there is no question that the British-Museum specimen from Salanga is *I. Weberi*,

* *Ann. Mus. Genov.* (2), vii. p. 525 (1889-1890).

Karsch, a species recorded from the same locality. Consequently *Phipsoni* is synonymous with *Weberi*. Moreover, after carefully comparing Mr. Oates's specimens with the description of *I. messor*, Simon, I cannot find a single character to justify the specific separation of the specimens named *Phipsoni* from those named *messor*.

I believe, therefore, that the above synonymy is correct. If so, the species has a fairly wide range, occurring in Tenasserim, the Malay Peninsula, and Java, and, according to Thorell, as far to the east as Keeling Island.

ISOMETRUS HOSEI, sp. n. (Pl. XI. fig. 2.)

Colour: upper surface of trunk, tail, and appendages dull black, the hands, tarsal segments of legs, and vesicle with tinge of red; upper surface of chelicerae shining; pectines ochraceous; abdominal sternites and under surface of appendages with reddish tint.

Cephalothorax finely and closely granular throughout; anterior border widely and shallowly emarginate; ocular tubercle deeply and widely sulcate, the median eyes large and separated by a space equal to about half a diameter; no trace of keels running from the tubercle to the anterior margin, and the posterior keels which bound laterally and posteriorly the central cephalothoracic depression only very slightly developed.

Tergites finely granular throughout; the first six marked posteriorly with a median granular keel, the seventh marked with a short, anterior, median, granular keel and on each side with two slightly oblique granular keels which run from the hinder margin of the tergite to the middle of the plate, but do not unite in front; the third, fourth, fifth, and sixth tergites furnished posteriorly on each side of the middle with a conspicuous transverse ridge formed by an aggregation of coarser granules.

Sternites: four anterior bisulcate and almost wholly smooth, feebly granular only on the side margins; the fifth very feebly granular and armed with four granular keels, of which the two internal attain the hinder margin of the plate, while the external are situated in the middle with their extremities far from the anterior and posterior margins.

Tail somewhat slender, a little thicker at the base than at the apex; the intercarinal spaces almost wholly smooth, at most very feebly granular, the keels strongly marked but weakly granular;

the first segment with ten keels, the second, third, and fourth with eight; the fifth with six keels, whereof the median inferior is strongly developed and the superior lateral very feeble; the superior median excavation in the caudal segments, shallow on the first, becomes progressively shallower from before backwards and is almost absent on the fifth. *Vesicle* with a conspicuous but very feebly granular inferior median keel and very faint traces of a lateral keel on each side of it; aculeus slender and long, as long as the vesicle; spine under the aculeus strongly developed.

Palp.—*Humerus* with upper surface very finely granular and bounded in front and behind by a more coarsely granular ridge; anterior surface defined below by a feebly granular ridge and bearing a few larger granules; inferior surface smooth, posterior surface smooth. *Brachium* with three feebly granular keels on its upper surface, a smooth weak keel on its posterior surface, a few larger granules in front, and with smooth under surface. *Hand* narrower than brachium, furnished above with two very weak, very feebly granular keels, and in front with a few slightly larger granules. *Dactyli* long, curved, in contact throughout their extent, neither lobate nor sinuate.

Legs.—*Coxæ* smooth; *femora* granular in front, carinate and granular above and below, smooth behind; *patellæ* granular and carinate anteriorly; *tibiæ* also granular and carinate, those of the two posterior pairs armed distally beneath with a stout spine.

Pectines extending as far as, but not beyond, the distal extremity of the coxæ of the fourth pair of legs, furnished with 20-21 similar teeth and not provided with an internal basal lobe.

Stigmata slit-like.

Measurements in millimetres.—Total length 62; cephalothorax, length 7.5, width 7; tail, length 40, width at base 3.5, at posterior end of 5th segment 2.5; 1st segment, length 4.5; 2nd segment, length 5.5 (of the two together 10.5); 5th segment, length 8.3; vesicle, length 4.5, width 2.4; aculeus, length 3. *Palp*—*humerus*, length 7; *brachium*, length 8.5, width 3; *hand*, length 2.5; length of "hand-back" 4, of movable *dactylus* 8.5.

A single specimen, in all probability a female, from Baram in Borneo, collected by Mr. Charles Hose.

Superficially this Scorpion bears a strong resemblance to the females of the black American species *I. americanus*, *I. androcot-*

toides, and *I. insignis*. From these, however, it may be at once recognized by its keelless hands and cephalothorax and its spurred posterior tibiae. Of the Oriental species it appears to come nearest to *I. scutilus* of Koch, but the two may be separated by their marked difference in colour, the number of pectinal teeth, &c.

ISOMETRUS INFUSCATUS, sp. n.

Colour (dry specimen) very deeply infusate throughout; upper surface of the trunk, the tail above and below, and anterior surface of limbs obscurely variegated with fulvous spots and bands.

Cephalothorax lightly emarginate in front, covered more or less completely, but not particularly closely, with low rounded granules, which are smaller and more scattered on the anteoocular area; ocular tubercle well developed, smooth and excavated between the eyes; distance between the eyes greater than a diameter.

Tergites somewhat coarsely granular throughout, the granules coarser and more close-set posteriorly; each of the first six marked with a relatively long median granular keel; the seventh with a conspicuous median, anterior, granular prominence and two well-developed granular keels on each side.

Sternites: first two smooth, third weakly granular at the sides, fourth weakly granular at the sides and behind, smooth only in the middle in front, the fifth weakly granular throughout and furnished with four subequal granular keels.

Tail robust, shallowly excavated above; intercarinal spaces very weakly granular; the terminal granule of the superior keels large and tuberculiform; the first and second segments furnished with ten evenly granular keels, the median lateral keel of the second segment, however, being considerably weaker than the rest; the third and fourth segments furnished with eight, and the fifth with five evenly granular keels. *Vesicle* smooth above, serially granular beneath; the subaculear tooth large, compressed, and armed with a distinct tubercle.

Palp.—*Humerus* weakly granular above and behind; the superior keels manifest but not coarsely granular; anterior surface furnished with a few large tubercles and bounded below by a weakly granular keel. *Brachium* above furnished with two weakly granular keels, subcostate but not granular behind, dentate in front, smooth below. *Manus* not carinate, rounded and

almost wholly smooth. *Digits* long, curved, in contact throughout their extent.

Legs with anterior surfaces granular, carinate; *tibiæ* of two posterior pairs spurred.

Pectines very short and armed with ten teeth.

Stigmata small and slit-like.

Measurements in millimetres.—Total length 35, of tail 20.5; 1st segment, length 2.3, width 3; 2nd, length and width 2.5; 3rd, length 2.7, width 2.5; 4th, length 3.2, width 2.2; 5th, length 4.7, width 2.2; vesicle, length 2.5, width 1.5. Palp—humerus, length 4; brachium, length 4.5, width 2; manus, width 1.7; length of "hand-back" 2.3; movable digit, length 5.

A single female specimen in the Museum collection ticketed Philippine Islands, from the collection of Mr. Cuming.

This species is very closely allied to *I. armillatus* (Gerv.), a species only known to me from Gervais's figure and description of it, and from the characters that Mons. Simon has mentioned in his synoptical table of the Oriental species of the genus. On the strength, however, of there being in this species of mine no trace of the black "bracelet" of the brachium and only ten pectinal teeth as opposed to eighteen in Gervais's type, I have ventured to regard it as new. This form most nearly resembles *I. armillatus* in having ten keels on the first two caudal segments, four keels on the posterior abdominal sternite, and at least the last two abdominal sternites covered with granules. In the number of its pectinal teeth it comes nearest to *Androctonus variegatus*, Gerv., from New Ireland.

ISOMETRUS ARMATUS, sp. n. (Pl. XI. figs. 3-3 d.)

Colour (specimen dried and probably somewhat faded) almost wholly fulvous, with feeble indications of fuscous markings on the upper surface of the trunk and limbs; ocular tubercle black.

Cephalothorax deeply emarginate in front, thickly covered with larger and smaller granules; the central depression smooth, deep behind; the area external to the tubercle also smooth, as also for the most part is the tubercle, the granules at the summit of the sides of the depression forming in the posterior third of the cephalothorax an indistinct keel.

Tergites thickly granular throughout, from the second to the sixth with a conspicuous median keel, the seventh with an anterior subgranular median keel and two strongly granular lateral keels,

whereof the external extends almost to the anterior margin of the tergite, and the internal has its posterior granule much larger than the rest.

Sternites: anterior three smooth, fourth weakly granular only at the sides, the fifth weakly granular throughout and furnished with four posteriorly complete, anteriorly abbreviated granular keels.

Tail moderately strong, not elongate, almost parallel-sided; intercarinal spaces weakly granular; all the keels of the first four segments strongly granular; the first segment furnished with ten complete evenly granular keels, whereof the four superior are more strongly developed behind than in front; the second segment also furnished with ten keels, but the median lateral keel is weaker than the rest, each of the four superior keels elevated behind into a large tooth, these teeth on the superior keels greater than those on the superior lateral keels; third and fourth segments furnished with eight granular keels; the superior keels of the third developed behind into an enormously long and strong erect tooth; a similar, but smaller tooth on the superior keels of the fourth segment; superior lateral keels of the third bearing distally a large tooth, the corresponding keel on the fourth segment evenly granular throughout; fifth segment convex above, with a shallow median sulcus, the superior keels very weakly granular, a few strong granules only close to the vesicle, inferior lateral keels evenly granular throughout; inferior surface very convex, the median keel well expressed and strongly granular, almost tubercular behind; in the anterior half the granules on each side of it form a single longitudinal series, and posteriorly there are on each side a few irregularly arranged large tubercles. *Vesicle* slender, granular and costate beneath, the spine well developed; the aculeus of the ordinary form.

Palp.—*Humerus* with the upper keels granular and the well-developed space between them very feebly granular; posterior surface with weakly granular keel; anterior surface bearing several large tubercles and a finely granular keel below. *Brachium* above with three well-developed keels, whereof the two posterior are only subgranular; anterior surface armed with a few large and sharp tubercles; inferior surface subcostate and weakly granular. *Manus* much rounded and swollen, wider than the brachium, very feebly granular and subcostate above. *Digits* long and slender, curved and subcostate; the immovable digit at

the base bearing a distinct lobe, on the distal side of which is a distinct sinuation, the opposite (external superior) surface being convex to correspond with the sinuation; the movable digit sinuate and lobate to correspond with the lobe and sinuation of the immovable digit.

Legs strongly granular and costate; *tibiæ* of two posterior pairs armed distally with a spur.

Pectines long, projecting beyond the fourth coxæ, furnished with 19 similar teeth.

Measurements in millimetres.—Total length 43, tail 28; 1st segment, length 3, width 3·5; 2nd, length 4, width 3; 3rd, length 4·3; 4th, length 5; 5th, length 7, width 3; vesicle, length 3·5, width 2, height 2. Palp—humerus, length 5; brachium, length 5·5, width 2; manus, width 2·5, length of "hand-back" 3·5; movable digit, length 5·7.

A single male specimen from Port Essington on the N. coast of Australia, from Dr. Richardson's collection*.

This species is related to *I. variatus*, Thorell. The male of this last-named form is described and figured in Count Keyserling's 'Arachniden Australiens—Scorpiones,' pp. 9–11, and figured, as also is the female, on pl. i. An examination of this figure shows clearly the points of difference between the two species. Thus in *I. variatus* each of the four anterior caudal segments is provided with a tooth, and the teeth are approximately equal in size, whereas in *I. armatus* the second, third, and fourth only are dentate and the tooth of the third is considerably larger than the others; again, in *I. variatus* there is no sinuation in the digits such as is met with in *I. armatus*, and the manus is not wider than the brachium; the manus with its dactyli, too, is much shorter, being only slightly longer than the first two caudal segments, whilst in *I. armatus* it is almost as long as the first two and half the third.

ISOMETRUS SERRATUS, sp. n. (Pl. XI. figs. 4–4 b.)

Colour (dry specimen): prevailing colour ochraceous or fulvous, variegated with black; ocular tubercle black; antecocular area of cephalothorax infuscate; tergites mostly ochraceous, each, except the last, marked posteriorly with a lateral fuscous spot on each

* Since the above was written, I have come across a female specimen of this species, and have figured it on Pl. XI. fig. 3. It differs from the male in that the hand and dactyli are of normal form and the caudal spines much smaller.

side and a median wide fuscous patch ; this median patch interrupted on each side of the median keel by a single conspicuous subcircular testaceous spot ; tail infusate beneath ; legs fuscous, variegated with testaceous spots ; humerus and brachium resembling the legs in colour ; manus wholly pale, digits infusate.

Cephalothorax lightly emarginate in front, finely and closely granular throughout ; the median depression deep behind, shallow over the tubercle, widened behind and in front of it.

Tergites thickly covered with larger and smaller granules, the first six furnished with a long median granular keel, the last with a median granular keel in its anterior half and two long, anteriorly abbreviated, subparallel, granular keels on each side.

Sternites almost wholly smooth, the last furnished with four long granular keels, whereof the external are more complete than the internal.

Tail long, slender, and nearly parallel-sided ; upper surface scarcely excavated ; the intercarinal spaces at most very weakly granular ; the first segment furnished with ten weakly denticulate keels, whereof the median lateral is obsolete in front ; the second and third segments furnished with eight keels similar to those on the first ; the terminal denticle of the four superior keels on each of these segments very much enlarged and bluntly spiniform ; the two superior keels of the fourth segment almost obsolete, the inferior keels resembling those of the preceding segment ; the fifth segment weakly granular above but without keels, the inferior keels resembling those of the preceding segment.

Vesicle absent.

Palp.—Upper surface of *humerus* with two granular keels, posterior surface granular and weakly dentate, anterior surface armed with larger and smaller teeth ; *brachium* also furnished with larger and smaller teeth in front, furnished with weakly granular keels above and below. *Manus* large and round, subdentate in front, subcostate but not granular above ; digits long, slender, curved and costate, somewhat widely separated at the base owing to the deep sinuation of the immovable digit ; the movable not furnished with a basal lobe.

Legs granularly costate ; inferior surface of the *femora* distinctly and coarsely serrate ; *tibiæ* of two posterior pairs furnished with a small apical spur.

Pectines absent.

Measurements in millimetres.—Total length (without vesicle)

54, of trunk 17; 1st caudal segment, length 5·5, width 2·7; 2nd, length 6·5; 3rd, length 7·5; 4th, length 8·3; 5th, length 9, width 2·5. Palp—humerus, length 6; brachium, length 8, width 2·7; manus, width 3, length of “hand-back” 4·2; movable digit, length 7·5.

A single male specimen from Round Island (near Mauritius), collected by Col. Pike, U.S. Consul, and presented to the British Museum in 1870 by Sir Henry Barkly.

Although, owing to its dried state and the absence of the pectines and of the vesicle, a full diagnosis of this specimen has been rendered impossible, I have had no hesitation in describing it as the representative of a new species. Of all the species known to me, it appears to be most nearly allied to the Indo-Malayan form *I. scutillus* of Koch. It may, however, be at once recognized from this by its dilated band, sinuate finger, and by the strongly spiniform nature of the terminal tooth of the superior keels on the first three caudal segments.

ISOMETRUS BURDOI, *Simon*. (Pl. XI. fig. 5.)

(*Simon, Bull. Soc. Ent. Belg.* 1882, p. lviii.)

Colour testaceous or ochraceous, variegated with black or fuscous patches, spots, or lines. Cephalothorax, with ocular tubercle and anteoocular area, infuscate; a more or less interrupted, longitudinal, fuscous band runs from the area of the lateral eyes to the posterior margin; the posterior half of the sulcus fuscous; the postero-lateral portions bearing a patch of black which corresponds in position to a patch on each of the tergites; on the sides are two or three oblique, short, fuscous bands. Upper surface of the abdomen bearing three parallel, longitudinal, fuscous bands, whereof one is median and one on each side; the median band more or less completely divided into two by a testaceous spot which occupies the centre of each tergite; the lateral bands, also, more or less broken up by testaceous spots; the sides of the tergites, except for a single anterior black spot, testaceous; under surface of trunk testaceous, the posterior sternite only being slightly infuscate laterally. Upper surface of the tail mostly pale, sometimes with a median fuscous spot on the segments; the sides and inferior surface clouded with fuscous or black patches; the under surface and sides of the fifth segment uniformly fuscous; vesicle mostly fuscous, with more or less faint traces of pale lines; aculeus paler externally than

distally. Upper surface of chelicerae infusate. Palp, with humerus, pale beneath, marked above by a median fuscous band; brachium infusate above and below, deeper in tint above; manus testaceous; dactyli fuscous, with testaceous tips. Anterior surface of legs variegated; femora marked by two spots; patellæ, tibiæ, and two tarsal segments each marked proximally by a fuscous band.

Cephalothorax widely emarginate in front; the median sulcus deep behind, shallow over the ocular tubercle and in front; the antecular area finely and closely granular throughout, the posterior regions much more coarsely granular; ocular tubercle finely and sparsely granular.

Tergites granular throughout; except the last, marked with a median posterior granular keel; the last marked in front with a median rounded prominence and on each side with two coarsely granular keels.

Sternites smooth, very sparsely hairy; the posterior without a trace of keels, very faintly granular at the sides.

Tail robust, thicker at the base than at the apex, moderately excavated above, finely granular at the sides and above and, on the posterior segments, beneath; the first segment marked with eight granular keels, the two inferior keels being obsolete and the median lateral keel well-developed; the second also has the inferior keels obsolete, and the median lateral keel not developed, or at most but slightly represented; the third and fourth segments marked with eight keels; the fifth with five keels; the four superior keels of the first four segments very strongly developed and terminating in a longer tooth; the superior keels of the fifth very finely and evenly granular throughout. *Vesicle* very slender, smooth above, subserially granular or tubercular beneath; spine beneath the aculeus strong and simple.

Palp.—Superior and anterior surfaces of *humerus* finely and closely granular, the posterior, two superior, and antero-inferior keels strongly granular; the anterior surface tubercular and the inferior surface minutely granular proximally. *Brachium* costate and very sparsely granular above, tubercular in front, smooth behind and below. *Manus* rounded and almost smooth, furnished only on the anterior border with one or two sharp tubercles; narrower than the brachium. *Dactyli* long and curved; the larger lateral teeth set close together on each side of the main series.

Chelicerae with movable dactylus armed above with three, below

with two teeth; the tooth on the inferior edge of the immovable dactylus well developed.

Legs in front granular and costate; *tibiae* of two posterior pairs spurred beneath at apex; *coxæ* smooth.

Pectines not extending beyond the extremity of the fourth coxæ, furnished with seventeen similar teeth.

Stigmata slit-like.

Measurements in millimetres.—Total length 40; cephalothorax, length 4·5, width 5; tail, length 13·5, of first two segments 5·5, of 5th segment 5; width of 1st segment 2·7, of 5th 2; vesicle, length 2·7, width 1·5. Palp—humerus, length 4; brachium, length 4·4, width 1·8; manus, width 1·4; "hand-back," length 2; movable dactylus, length 4·6.

Two specimens, both apparently females, sent by the Universities' Mission from Lake Nyassa, and a third specimen, also a female, taken at Taveita (Kilima Njaro) by Mr. F. J. Jackson. This specimen from Kilima Njaro differs in some slight particulars from those collected near Lake Nyassa, which have been described above; thus the inferior surface of the tail is much more deeply infuscate; the inferior keels of the first two caudal segments and the superior keels of the fifth are more strongly developed; the vesicle is more coarsely granular, and there are only fourteen pectinal teeth.

This species may be recognized by the absence of keels on the last abdominal sternite.

ISOMETRUS ASPER, sp. n.

Colour deeply infuscate, variegated with fulvous spots and bands; ocular tubercle black, antecular region spotted fulvous, lateral and posterior regions of the cephalothorax marked with oblique black and fulvous bands; the middle of each tergite marked with a black T-shaped spot, the cross-bar of the T running along the posterior margin; the rest of the tergites marked with six irregular-shaped, more or less interrupted longitudinal fulvous bands; two of these bands are situated on the lateral margins and each terminates on the posterior margin in a more conspicuous, subcircular, fulvous spot, so that the posterior margins of the tergites are marked with six yellow spots; tail variegated throughout, the fulvous tints taking the form of well-defined subcircular spots; upper surface of humerus and brachium

similarly marked with fulvous spots; head infusate, and adorned with black lines; dactyli wholly fulvous; legs marked with transverse black lines; the last tergite and the posterior half of the one that precedes it infusate and spotted with yellow.

Cephalothorax thickly and coarsely granular throughout; the central depression deeply marked behind, shallow over the tubercle and in front; the centre of the tubercle smooth, the sides feebly granular; anterior margin of cephalothorax more deeply excavated in the middle.

Tergites coarsely and closely granular throughout, the first six with a well-developed median granular keel, the last with a median granular prominence and two lateral granular keels on each side.

Sternites: first three smooth, the fourth granular at the sides, the fifth granular throughout, marked with two internal, anteriorly abbreviated, granular keels, and on each side a short external granular keel abbreviated anteriorly and posteriorly.

Tail of medium size, moderately excavated above; intercarinal spaces granular; keels well developed and granular; the first and second segments with ten keels, the third and fourth with eight, the fifth with five; terminal granule of the superior keels the largest; upper surface of the fifth segment almost flat.

Vesicle marked beneath with five rows of granules; the spine large, sharp, and compressed; aculeus of the ordinary form.

Palp.—Upper surface of *humerus* coarsely granular throughout and bounded behind and before by a coarsely granular ridge; posterior surface marked with a granular keel; anterior surface coarsely granular in its upper half, bounded below by a finely granular ridge; very finely granular beneath. *Brachium* weakly granular above, but furnished with three granular keels, tubercular in front, almost smooth below, marked behind by a smooth keel. *Hand* almost smooth, furnished in front with a few low weak tubercles, and above with a short series of small granules which appears to be the continuation of a keel on the immovable digit; *digits* long and curved, in contact throughout, neither lobate nor sinuate. Anterior and upper surface of the *legs* granular and granularly costate; *tibiæ* of last two pairs armed distally with a spur; *coxæ* smooth.

Pectines short, furnished with 14 similar teeth.

The male differs from the female in being more elongate (*cf.* measurements), in having longer pectinal teeth, and the superior

keels on the fifth caudal segment less developed, and in the slight basal separation of the dactyli.

— *Measurements in millimetres.*— ♀. Total length 30; cephalothorax, length 3·5, width 3·8; length of tail 17·3, of first two segments 4·3, of fifth 4·5, of vesicle and aculeus 4·2; width of first segment 2·2, of fifth 2; length of humerus 3, of brachium 3·7; width of brachium 1·4, of manus 1·2; length of “hand-back” 2, of movable dactylus 3·5.

♂. Total length 36·5; cephalothorax, length 3·8; length of tail 23, of first two segments 6, of fifth 6, of vesicle and aculeus 4·2; width of first segment 2·2, of fifth 1·7; humerus, length 3·7; brachium, length 4·5, width 1·5, of manus 1·5; length of “hand-back” 2·3, of movable dactylus 4.

The Museum has two specimens, a female from Angola (*Dr. Welwitsch*), and a male from the Congo, collected by Andrew Curror, Esq., Surgeon R.N.

This species appears to be allied to *Pityus clathratus*, C. Koch, a species from the Cape of Good Hope, which is very likely referable to the genus *Isometrus*. But in *T. clathratus* the superior caudal keels are much elevated and strongly toothed.

I can make nothing of the description of *Lychas mabilanus*, Rochebrune*. This species is recorded from Gambia and declared to be different from *Lychas gabonensis* (= *I. maculatus*, De Geer). At all events it at least differs from *I. asper* in having twenty pectinal teeth.

EXPLANATION OF PLATE XI.

Fig. 1. *Isometrus tricarinatus*, Simon, ♂, nat. size.

1 a.	“	“	tail of ♂.
1 b.	“	“	tail of ♀.
1 c.	“	“	hand of ♂.
1 d.	“	“	hand of ♀.
2.	“	<i>Hosei</i> , sp. n., ♀,	nat. size.
3.	“	<i>armatus</i> , sp. n., ♀,	nat. size.
3 a.	“	“	hand of ♀.
3 b.	“	“	hand of ♂.
3 c.	“	“	tail of ♀.
3 d.	“	“	tail of ♂.
4.	“	<i>serratus</i> , sp. n., ♂,	nat. size.
4 a.	“	“	hand of ♂.
4 b.	“	“	tail of ♂.
5.	“	<i>Burdoi</i> , Simon, ♀,	nat. size.

* Bull. Soc. Philom. (7) viii. p. 28 (1884).

